

## WHAT IS CLAIMED IS:

## 1. An optical module comprising:

a column-shaped mounting member having a through hole extending in the direction of the central axis thereof and having a 5 mounting surface formed by partially incising a part of said mounting member so as to expose the interior surface of said through hole; and

an optical fiber inserted in said through hole and secured in a configuration such that said optical fiber protrudes with a specified 10 length onto said mounting surface, a Bragg diffraction grating being formed in such protruding part of said optical fiber on said mounting surface.

## 2. An optical module as defined in claim 1, further comprising an

15 optical semiconductor device provided on said mounting surface and optically connected to an end of said optical fiber.

## 3. An optical module as defined in claim 2, wherein said optical semiconductor device is a semiconductor optical amplifier.

## 20 4. An optical module as defined in claim 2, wherein said optical semiconductor device is a photodiode.

5. An optical module as defined in claim 1, wherein  
said mounting surface includes a first area and a second area, both  
being arranged so as to extend in the same direction as a groove  
that is formed extending in continuation with, and in the same  
5 direction as, said through hole; said protruding part where said  
Bragg diffraction grating is formed in said optical fiber is located in  
said first area; and wherein  
said optical module further comprises:  
a semiconductor light emitting device provided in said second area  
10 of said mounting surface so as to face an end of said optical fiber  
and optically connected to said end of said optical fiber;  
an optical device capable of reflecting incident light of a specified  
wavelength range and transmitting light of another specified  
wavelength range, said optical device being positioned between the  
15 part of said optical fiber where said Bragg diffraction grating is  
formed and the part of said optical fiber which is inserted in said  
through hole so that said optical device is optically connected to  
both of said parts of said optical fiber; and  
a semiconductor optical receiver device provided in said first area of  
20 said mounting surface and optically connected to said optical device.
6. An optical module as defined in claim 1, wherein said mounting  
member is made of a ceramic material.

7. An optical module as defined in claim 6, wherein said ceramic material is either alumina or zirconia.
- 5 8. An optical module as defined in claim 1, wherein a lead frame is also provided so as to support said mounting member, said lead frame being electrically connected to said optical semiconductor device.
- 10 9. An optical module as defined in claim 1, wherein a resin sealing body is also provided to envelope said optical semiconductor device and said protruding part of said optical fiber on said mounting surface.
- 15 10. An optical module comprising:
  - a column-shaped mounting member having a through hole extending in the direction of the central axis thereof and having a mounting surface formed by partially incising a part of said mounting member so as to expose the interior surface of said through hole; and
  - an optical fiber inserted in said through hole and secured in a configuration such that said optical fiber protrudes with a specified length onto said mounting surface, a Bragg diffraction grating being
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formed in such protruding part of said optical fiber on said mounting surface after such securing of said optical fiber.

11. An optical module comprising:

5 a mounting member having a first section wherein a through hole is formed extending along the central axis thereof, and a second section wherein a groove is formed extending in continuation with, and in the same direction as, said through hole; and  
an optical fiber inserted in said through hole and secured in a  
10 configuration such that said optical fiber protrudes with a specified length into said groove, a Bragg diffraction grating being formed in such protruding part of said optical fiber.

12. An optical module comprising:

15 a mounting member having a first section wherein a through hole is formed extending along the central axis thereof, and a second section wherein a groove is formed extending in continuation with, and in the same direction as, said through hole; and  
an optical fiber inserted in said through hole and secured in a  
20 configuration such that said optical fiber protrudes with a specified length into said groove, a Bragg diffraction grating being formed in such protruding part of said optical fiber after such securing of said optical fiber.